

What is claimed is:

1. A toner container for an electrophotographic image forming apparatus, comprising:

a toner outlet for discharging toner; and

a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position.

2. A toner container as claimed in claim 1, wherein said mating portion comprises a tubular body.

3. A toner container as claimed in claim 1, further comprising a bottom and a side wall connecting said bottom and said toner outlet and including reduced structure sequentially reduced in size toward said toner outlet.

4. A toner container as claimed in claim 3, wherein a surface of said side wall forming said reduced structure is inclined relative to a section of said tubular body by an angle of about 45 degrees to about 90 degrees.

5. A toner container as claimed in claim 3, further comprising pressure adjusting means provided on one of said bottom and said side.

6. A toner container for an electrophotographic image forming apparatus, comprising:

a toner outlet implemented by a tubular body for discharging toner; and

a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position;

said toner container being packed with toner.

7. A toner container as claimed in claim 6, wherein assuming that said toner container is packed with the toner to a packing density determined by dividing a weight (g) of the toner by a capacity ( $\text{cm}^3$ ) of said toner container, said packing density is  $0.7 \text{ g/cm}^3$ .

8. A toner container as claimed in claim 7, wherein said toner outlet is sealed.

9. A toner container as claimed in claim 8, further comprising a cap for sealing said toner outlet.

10. A toner container as claimed in claim 8, further comprising a sheet adhered to a section of said tubular body.

11. A toner container as claimed in claim 7, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

12. A toner container for an electrophotographic image forming apparatus, comprising:

a toner outlet implemented by a tubular body;

a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position; and

a tight contact enhancing mechanism for enhancing tight contact between said mating portion and the elongate member.

13. A toner container as claimed in claim 12, wherein said tight contact enhancing member is provided on a surface of said tubular body.

14. A toner container as claimed in claim 12, wherein said mating portion comprises said tubular body and said tight contact

enhancing mechanism positioned in said tubular body.

15. A toner container as claimed in claim 12, wherein said mating portion comprises said tubular body and said tight contact enhancing mechanism positioned on an outer periphery of said tubular body.

16. A toner container as claimed in claim 12, wherein said tight contact enhancing mechanism comprises an elastic member.

17. A toner container as claimed in claim 14, wherein said tight contact enhancing mechanism comprises a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being fitted in at least one tubular body and adhered to an inner periphery of said tubular body.

18. A toner container as claimed in claim 12, further comprising a bottom and a side wall connecting said bottom and said toner outlet and including reduced structure sequentially reduced in size toward said toner outlet.

19. A toner container as claimed in claim 18, wherein a surface of said side wall forming said reduced structure is inclined relative to a section of said tubular body by an angle of about 45 degrees to about 90 degrees.

20. A toner container as claimed in claim 18, wherein said bottom has four sides, at least one of four sides forming said side wall being inclined relative to a section of said tubular body by less than 90 degrees.

21. A toner container as claimed in claim 18, further comprising pressure adjusting means provided on said bottom and said side wall.

22. A toner container for an electrophotographic image forming apparatus, comprising:

a toner outlet implemented by a tubular body for discharging toner;

a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position; and

tight contact enhancing mechanism for enhancing tight contact between said mating portion and the elongate member;

said toner container being packed with toner.

23. A toner container as claimed in claim 6, wherein assuming that said toner container is packed with the toner to a packing density determined by dividing a weight (g) of the toner by a capacity ( $\text{cm}^3$ ) of said toner container, said packing density is  $0.7 \text{ g/cm}^3$ .

24. A toner container as claimed in claim 22, wherein said toner outlet is sealed.

25. A toner container as claimed in claim 24, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner periphery of said tubular body.

26. A toner container as claimed in claim 24, further comprising a cap for sealing said toner outlet.

27. A toner container as claimed in claim 26, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

28. A toner container as claimed in claim 24, further comprising a sheet adhered to a section of said tubular body.

29. A toner container as claimed in claim 22, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

30. A toner container for an electrophotographic image forming apparatus, comprising:

a sack formed of a flexible material;

a toner outlet for discharging toner; and

a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position;

said sack being deformable in accordance with an air pressure to thereby vary a capacity thereof.

31. A toner container as claimed in claim 30, wherein the flexible material is about 20  $\mu\text{m}$  to about 200  $\mu\text{m}$  thick.

32. A toner container as claimed in claim 30, wherein the flexible material comprises a resin film.

33. A toner container as claimed in claim 30, wherein said toner outlet comprises a tubular body including a connecting portion for connecting said toner outlet to an opening formed in said sack

and said mating portion.

34. A toner container as claimed in claim 33, wherein a wall of said sack adjoining an end portion of said tubular body extending from an end of said connecting portion is substantially parallel to an outer periphery of said connecting portion.

35. A toner container as claimed in claim 33, wherein said mating portion of said tubular body has an inside diameter greater than an inside diameter of said connecting portion.

36. A toner container as claimed in claim 33, wherein said connecting portion has a ship-like section.

37. A toner container as claimed in claim 33, further comprising a flange extending radially outward from a position between said mating portion and said connecting portion substantially in parallel to a section of said tubular body.

38. A toner container as claimed in claim 33, wherein said mating portion and said connecting portion are separable from each other.

39. A toner container as claimed in claim 30, further comprising a bottom and a side wall connecting said bottom and said toner outlet and including reduced structure sequentially reduced in size toward said toner outlet.

40. A toner container as claimed in claim 39, wherein a surface of said side wall forming said reduced structure is inclined relative to a section of said tubular body by an angle of about 45 degrees to about 90 degrees.

41. A toner container as claimed in claim 39, wherein said bottom has four sides, at least one of four sides forming said side wall being inclined relative to a section of said tubular body by less than 90 degrees.

42. A toner container as claimed in claim 39, further comprising pressure adjusting means provided on one of said bottom and said side wall.

43. A toner container for an electrophotographic image forming apparatus, comprising:

- a sack formed of a flexible material;

- a toner outlet implemented by a tubular body for discharging toner; and

- a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position;

- said sack being packed with toner and deformable in accordance with an air pressure to thereby vary a capacity thereof.

44. A toner container as claimed in claim 43, wherein said toner outlet is sealed.

45. A toner container as claimed in claim 44, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner periphery of said tubular body.

46. A toner container as claimed in claim 44 further comprising a cap for sealing said toner outlet.

47. A toner container as claimed in claim 46, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

48. A toner container as claimed in claim 4, further comprising a sheet adhered to a section of said tubular body.

49. A toner container as claimed in claim 43, further comprising position preserving means for preserving a position of said sack.

50. A toner container as claimed in claim 49, wherein said position preserving means comprises a box-like member surrounding an entire periphery of said sack.

51. A toner container as claimed in claim 43, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

52. A toner container for an electrophotographic image forming apparatus, comprising:

- a sack formed of a flexible material;

- a toner outlet implemented by a tubular body for discharging toner; and

- a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position;

- said sack being deformable in accordance with an air pressure to thereby vary a capacity thereof;



wherein assuming that said toner container is packed with toner to a packing density determined by dividing a weight (g) of the toner by a capacity ( $\text{cm}^3$ ) of said toner container, said packing density is  $0.7 \text{ g/cm}^3$ .

53. A toner container as claimed in claim 52, wherein said toner outlet is sealed.

54. A toner container as claimed in claim 53, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner periphery of said tubular body.

55. A toner container as claimed in claim 53, further comprising a cap for sealing said toner outlet.

56. A toner container as claimed in claim 55, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

57. A toner container as claimed in claim 53, further comprising a sheet adhered to a section of said tubular body.

58. A toner container as claimed in claim 52, further comprising position preserving means for preserving a position of said sack.

59. A toner container as claimed in claim 58, wherein said position preserving means comprises a box-like member surrounding an

entire periphery of said sack.

60. A toner container as claimed in claim 52, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

61. A toner container for an electrophotographic image forming apparatus, comprising:

a sack formed of a flexible material;

a toner outlet implemented by a tubular body for discharging toner; and

a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position;

said sack being deformable in accordance with an air pressure to thereby vary a capacity thereof;

wherein assuming that said toner container is packed with toner, that said toner container has a maximum capacity  $C_{max}$ , and that said toner container packed with the toner and sealed has a capacity  $C_{toner} + C_{air}$  where  $C_{toner}$  and  $C_{air}$  respectively denote a capacity occupied by the toner and a capacity occupied by air, said toner container is packed with the toner to satisfy a relation:

$$(C_{max}) - \{(C_{toner}) + (C_{air})\} \geq 0.1 \times (C_{air})$$

62. A toner container as claimed in claim 61, wherein assuming that said toner container is packed with the toner to a packing density determined by dividing a weight (g) of the toner by a capacity ( $cm^3$ )

of said toner container, said packing density is  $0.7 \text{ g/cm}^3$ .

63. A toner container as claimed in claim 62, wherein said toner outlet is sealed.

64. A toner container as claimed in claim 63, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner periphery of said tubular body.

65. A toner container as claimed in claim 63, further comprising a cap for sealing said toner outlet.

66. A toner container as claimed in claim 65, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

67. A toner container as claimed in claim 63, further comprising a sheet adhered to a section of said tubular body.

68. A toner container as claimed in claim 61, further comprising position preserving means for preserving a position of said sack.

69. A toner container as claimed in claim 68, wherein said position preserving means comprises a box-like member surrounding an entire periphery of said sack.

70. A toner container as claimed in claim 61, wherein the toner is delivered from said toner container to a developing section of said

image forming apparatus by an air stream.

71. A toner container for an electrophotographic image forming apparatus, comprising:

- a sack formed of a flexible material;

- a toner outlet for discharging toner;

- a mating portion for allowing said toner outlet to mate with an elongate matter and remain in a mating position; and

- a tight contact enhancing mechanism for enhancing tight contact between said mating portion and the elongate matter;

said sack being deformable in accordance with an air pressure to thereby vary a capacity thereof.

72. A toner container as claimed in claim 71, wherein said toner outlet comprises a tubular body, said tight contact enhancing mechanism being provided on a surface of said tubular body.

73. A toner container as claimed in claim 71, wherein said mating portion comprises a tubular body and said tight contact enhancing mechanism positioned in said tubular body.

74. A toner container as claimed in claim 71, wherein said mating portion comprises a tubular body and said tight contact enhancing mechanism positioned on an outer periphery of said tubular body.

75. A toner container as claimed in claim 71, wherein said tight contact enhancing mechanism comprises an elastic member.

76. A toner container as claimed in claim 73, wherein said tight contact enhancing mechanism comprises a flat elastic member

sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being fitted in at least one tubular body and adhered to an inner periphery of said tubular body.

77. A toner container as claimed in claim 30, wherein the flexible material is about 20  $\mu\text{m}$  to about 200  $\mu\text{m}$  thick.

78. A toner container as claimed in claim 71, wherein the flexible material comprises a resin film.

79. A toner container as claimed in claim 71, wherein said toner outlet comprises tubular body including a connecting portion for connecting said toner outlet to an opening formed in said sack and said mating portion.

80. A toner container as claimed in claim 79, wherein a wall of said sack adjoining an end portion of said tubular body extending from an end of said connecting portion is substantially parallel to an outer periphery of said connecting portion.

81. A toner container as claimed in claim 79, wherein said mating portion of said tubular body has an inside diameter greater than an inside diameter of said connecting portion.

82. A toner container as claimed in claim 79, wherein said connecting portion has a ship-like section.

83. A toner container as claimed in claim 79, further comprising a flange extending radially outward from a position between said mating portion and said connecting portion substantially in parallel to a section of said tubular body.

84. A toner container as claimed in claim 79, wherein said mating portion and said connecting portion are separable from each other.

85. A toner container as claimed in claim 71, further comprising a bottom and a side wall connecting said bottom and said toner outlet and including reduced structure sequentially reduced in size toward said toner outlet.

86. A toner container as claimed in claim 85, wherein a surface of said side wall forming said reduced structure is inclined relative to a section of said tubular body by an angle of about 45 degrees to about 90 degrees.

87. A toner container as claimed in claim 85, wherein said bottom has four sides, at least one of four sides forming said side wall being inclined relative to a section of said tubular body by less than 90 degrees.

88. A toner container as claimed in claim 85, further comprising pressure adjusting means provided on one of said bottom and said side wall

89. A toner container for an electrophotographic image forming apparatus, comprising:

- a sack formed of a flexible material;

- a toner outlet implemented by a tubular body for discharging toner;

- a mating portion for allowing said toner outlet to mate with an elongate member and remain in a mating position; and

a tight contact enhancing mechanism for enhancing tight contact between said mating portion and the elongate member;

said sack being packed with toner and deformable in accordance with an air pressure to thereby vary a capacity thereof.

90. A toner container as claimed in claim 89, wherein said toner outlet is sealed.

91. A toner container as claimed in claim 90, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner periphery of said tubular body.

92. A toner container as claimed in claim 90, further comprising a cap for sealing said toner outlet.

93. A toner container as claimed in claim 92, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

94. A toner container as claimed in claim 90, further comprising a sheet adhered to the section of a tubular body.

95. A toner container as claimed in claim 89, further comprising position preserving means for preserving a position of said sack.

96. A toner container as claimed in claim 95, wherein said position preserving means comprises a box-like member surrounding an

entire periphery of said sack.

97. A toner container as claimed in claim 7, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

98. A toner container for an electrophotographic image forming apparatus, comprising:

a sack formed of a flexible material;

a toner outlet implemented by a tubular body for discharging toner;

a mating portion for allowing said toner outlet to mate with an elongate matter and remain in a mating position; and

a tight contact enhancing mechanism for enhancing tight contact between said mating portion and the elongate matter;

said sack being packed with toner and deformable in accordance with an air pressure to thereby vary a capacity thereof;

wherein assuming that said toner container is packed with toner to a packing density determined by dividing a weight (g) of the toner by a capacity (cm<sup>3</sup>) of said toner container, said packing density is 0.7 g/cm<sup>3</sup>.

99. A toner container as claimed in claim 98, wherein said toner outlet is sealed.

100. A toner container as claimed in claim 99, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner



periphery of said tubular body.

101. A toner container as claimed in claim 99, further comprising a cap for sealing said toner outlet.

102. A toner container as claimed in claim 101, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

103. A toner container as claimed in claim 99, further comprising a sheet adhered to the section of said tubular body.

104. A toner container as claimed in claim 98, further comprising position preserving means for preserving a position of said sack.

105. A toner container as claimed in claim 104, wherein said position preserving means comprises a box-like member surrounding an entire periphery of said sack.

106. A toner container as claimed in claim 98, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

107. A toner container for an electrophotographic image forming apparatus, comprising:

- a sack formed of a flexible material;

- a toner outlet implemented by a tubular body for discharging toner;

- a mating portion for allowing said toner outlet to mate with

an elongate matter and remain in a mating position; and

a tight contact enhancing mechanism for enhancing tight contact between said mating portion and the elongate matter;

said sack being packed with toner and deformable in accordance with an air pressure to thereby vary a capacity thereof;

wherein assuming that said toner container is packed with toner, that said toner container has a maximum capacity  $C_{max}$ , and that said toner container packed with the toner and sealed has a capacity  $C_{toner} + C_{air}$  where  $C_{toner}$  and  $C_{air}$  respectively denote a capacity occupied by the toner and a capacity occupied by air, said toner container is packed with the toner to satisfy a relation:

$$(C_{max}) - [(C_{toner}) + (C_{air})] \geq 0.1 \times (C_{air})$$

108. A toner container as claimed in claim 107, wherein assuming that said toner container is packed with the toner to a packing density determined by dividing a weight (g) of the toner by a capacity ( $\text{cm}^3$ ) of said toner container, said packing density is  $0.7 \text{ g/cm}^3$ .

109. A toner container as claimed in claim 107, wherein said toner outlet is sealed.

110. A toner container as claimed in claim 109, wherein said toner outlet is sealed by a flat elastic member sized to cover an inside of a section of said tubular body and formed with slits in direction of thickness, said elastic member being adhered to an inner

periphery of said tubular body.

111. A toner container as claimed in claim 109, further comprising a cap for sealing said toner outlet.

112. A toner container as claimed in claim 111, wherein one of a screw and a screw thread is formed in one of an inner periphery and an outer periphery of said tubular body while the other of the screw and the screw thread is formed in said cap, said cap sealing said toner outlet in threaded engagement with said tubular body.

113. A toner container as claimed in claim 109, further comprising a sheet adhered to the section of said tubular body.

114. A toner container as claimed in claim 107, further comprising position preserving means for preserving a position of said sack.

115. A toner container as claimed in claim 114, wherein said position preserving means comprises a box-like member surrounding an entire periphery of said sack.

116. A toner container as claimed in claim 107, wherein the toner is delivered from said toner container to a developing section of said image forming apparatus by an air stream.

117. In a method of packing toner in a toner container including a sack formed of a flexible material and a toner outlet and deformable in accordance with an air pressure to thereby vary a capacity thereof, said toner container is packed with the toner with said sack reduced in capacity beforehand.

118. A method as claimed in claim 117, wherein said toner is

packed with the toner with air being sucked out of said toner container.

119. An electrophotographic image forming method comprising the steps of:

setting a toner container packed with toner on an image forming apparatus including a developing section;

setting up a toner delivery passage between said toner container and said developing section; and

delivering the toner from said toner container to said developing section via said toner delivery path with an air stream.

120. A method as claimed in claim 119, wherein said toner delivery path is substantially hermetically closed at least during delivery of the toner.

121. A method as claimed in claim 119, wherein said toner delivery passage connects a toner outlet of said toner container and said developing section by elongate toner delivering means.

122. A method as claimed in claim 121, wherein said toner delivering means comprises air stream generating means for generating the air stream.

123. A method as claimed in claim 122, wherein said air stream generating means comprises at least one of air sucking means and air sending means.

124. A method as claimed in claim 119, said toner outlet comprises a tubular body, a tight contact enhancing mechanism being provided on an outer periphery of said tubular body.

125. An electrophotographic image forming apparatus comprising:

a developing section; and

elongate toner delivering means;

said developing section and one end of said toner delivering means being connected to each other.

126. An apparatus as claimed in claim 125, wherein said toner delivering means comprises air stream generating means.

127. An apparatus as claimed in claim 126, wherein said air stream generating means comprises at least one of air sucking means and air sending means.

128. An apparatus as claimed in claim 126, wherein said air stream generating means comprises air sending means including an air delivery port to which an air conduit is connected.

129. An apparatus as claimed in claim 128, wherein said toner delivering means comprises air sending means, a nozzle and a toner conduit, said nozzle including a tubular toner outlet portion and a tubular air inlet portion extending throughout said nozzle, said air delivery port of said air sending means and said air inlet portion being directly connected or connected via said air conduit, said toner outlet portion being connected to one end of said toner conduit whose other end is connected to said developing section.

130. An apparatus as claimed in claim 129, wherein said toner delivering means further comprises air sucking means including a suction port connected to said toner outlet portion either directly

or via a first toner conduit and a delivery port connected to said developing section either directly or via a second toner conduit.

131. An apparatus as claimed in claim 128, wherein a toner container including a toner outlet implemented by a tubular body and packed with toner is removably set on said apparatus, said tubular body being connected to said nozzle.

132. An apparatus as claimed in claim 131, a tight contact enhancing mechanism is provided on said tubular body.

133. An image forming apparatus using a toner container including a toner outlet implemented by a tubular body, a mating portion for allowing said toner outlet to mate with an elongate member and an air inlet, said image forming apparatus comprising:

a developing section; and

a toner conduit including air flow generating means;

said air inlet of said toner container being connected to one end of said toner conduit while said toner outlet being connected to said developing section.

134. An apparatus as claimed in claim 133, wherein said air stream generating means comprises air sucking means including a toner suction port connected to a first toner conduit and an air delivery port connected to said developing section either directly or via a second toner conduit.

135. An apparatus as claimed in claim 134, further comprising a tight contact enhancing mechanism provided on an end of said first toner conduit not connected to said toner suction port for enhancing

tight contact between said mating portion of said toner container and the elongate member.

136. An apparatus as claimed in claim 135, wherein said toner container is packed with toner.

137. An apparatus as claimed in claim 136, wherein said tubular body of said toner container and said end of said first toner conduit not connected to said toner suction port are connected to each other.

138. An apparatus as claimed in claim 137, wherein said tight contact enhancing mechanism is provided on said tubular body of said toner container.